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Creighton University Bulletin

VOL. 9 MAY No. 3

ANNOUNCEMENT

OF THE

COLLEGE OF PHARMACY

1917-1918

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Faculty

FRANCIS X. McMENAMY, S. J. . . . . The Creighton University
President of the University.

WILLIAM P. WHELAN, S. J. . . . . The Creighton University
Lecturer on Moral Principle in Pharmaceutical Practice, and Supervisor.

HOWARD C. NEWTON, Ph. C. . . Creighton College of Pharmacy
Dean, Professor of Theoretical and Practical Pharmacy.

I. CURTIS ARLEDGE, P. D. . . . . Creighton College of Pharmacy
Professor of Materia Medica and Botany.

JOHN E. O'BRIEN, Ph. C. . . . . . Creighton College of Pharmacy
Professor of Chemistry.

PAUL L. MARTIN, A. M., LL. B. . . . . Creighton College of Law
Lecturer on Pharmaceutical Law.

THOMAS BOLER, M. D. . . . . Brandeis Building
Lecturer on First Aids in Emergencies.

HERBERT GERALD, Ph. G., M. D.
. . . . Creighton College of Pharmacy
Professor of Physiology.

J. W. FORBING, B. S., Ph. C. . . . . . Creighton College of Pharmacy
Professor of Physics.

L. A. JOHNSON, Ph. G. . . . . Creighton College of Pharmacy
Instructor in Pharmacy.

C. E. STEVENS . . . . Creighton College of Pharmacy
Assistant in Chemistry.

The Creighton College of Pharmacy, formerly the Omaha College of Pharmacy, became a part of The Creighton University September 1, 1905. The school has enjoyed a rapid growth from the first and now ranks with the leading colleges of pharmacy in the country.

The building occupied by the College of Pharmacy adjoins the Creighton Medical College on the west, and is located at Fourteenth and Davenport streets. It is one of the finest and most completely equipped buildings of its kind. It will provide ample accommodations for the growing school for many years to come. On the first floor is a lobby which is equipped with steel lockers for the use of the gentlemen students. The ladies' rest room is also on this floor. It is furnished with every convenience for the comfort of the lady students. The museum and library occupies the large room at the back of the first floor. The library contains a choice selection of standard books upon pharmaceutical and chemical subjects. It also contains a complete set of the report of the American Pharmaceutical Association from the time of its origination in 1852. This is a complete library of pharmaceutical literature in itself. All the leading pharmaceutical and chemical journals are kept on file.

The museum contains collections of all the materials used in pharmacy. One of the finest collections in this room is one of every drug, chemical, and pharmaceutical preparation contained in the United States Pharmacopœia. It is literally the United States Pharmacopœia illustrated. This collection is open to the use of the students for study and much valuable information is gained from it.

On the second floor is a faculty room, two large lecture rooms, and a private laboratory for the use of the faculty only.

The third floor contains the general stock room and the pharmaceutical and chemical laboratories. These laboratories are fitted with every convenience for practical work and provide space for one hundred and forty students to work at one time.

There are some very strong features of this College which should be appreciated by all pharmacists and students of pharmacy. Foremost among these is the method of teaching—the laboratory method—admitted the best method of instruction, but possible in only the foremost colleges. Here, besides lectures and recitations, the subjects themselves are studied, books being used as an aid and not studied as an end, in themselves. The faculty are men who have been actively engaged in pharmacy, both in the retail and wholesale trade and consequently are enabled to give the student the benefit of their experience. Although Creighton College of Pharmacy is one of the largest in this portion of the country, yet it offers to the student the maximum amount of personal instruction and students come into close contract with the instructors. Because of the generous endowment, superior courses can be given without increased cost to the student.

The idea of imparting practical knowledge, which dominates all the courses, can, perhaps, be best exemplified by mentioning the fact that during the last year nearly 12,000 bona fide prescriptions were compounded by the students in the free dispensary.

AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES

This college holds membership in the American Conference of Pharmaceutical Faculties. The object of the Conference is to promote the interests of pharmaceutical education and all institutions holding membership in the same must maintain certain minimum requirements for entrance and graduation. Through the influence of this Conference, higher standards of education have been adopted from time to time and the fact that several states, by law or by Board ruling, recognize the standards of the Conference is evidence of this influence.

ENTRANCE REQUIREMENTS

Applicants for admission to the regular college course, leading to the degree of Graduate in Pharmacy must be at least 17 years of age, unless a graduate from a high school, in which case no age limit is required, and must present written evidence, signed by the principal, superintendent, or registrar of the school attended, showing the successful completion of at least one year of accredited high school work. (15 Regent's counts of which at least 4 counts must be in English).

Commencing with 1918, the successful completion of two years' high school work will be required for admission.

COURSE LEADING TO THE DEGREE OF GRADUATE IN PHARMACY

This course includes two academic years of 32 weeks each. The school year begins the last week in September and ends the first week in June (see college calendar). The first year is called the Junior and the second, the Senior year.

The course is arranged in a progressive manner. The subjects taken up at the beginning of the term lay the foundation for the subjects that follow. Although lectures are given daily, the students are required to study the lessons before they are taken up in class. Then by question and explanation the instructor fixes the principles upon the student's mind in such a way that the knowledge he obtains is of practical benefit to him. All laboratory work is done under the immediate supervision of the instructors.

The training acquired qualifies the graduate to pursue successfully any branch of pharmaceutical work or ordinary chemical analysis.

COURSE LEADING TO THE DEGREE OF PHARMACEUTICAL CHEMIST

This course has been introduced to meet the demands of many who wish to qualify as Commercial Chemists or Food and Drug Analyists. Full four years of high school work is required for admission to this course. All who enroll in this special course take the regular work for the first two years and after successful completion of it, they are given advanced instruction in Bacteriology, Pharmacology, Biology, German, English, Manufacturing Chemistry and Food Analysis. Special attention in given to the analysis of food and drugs so that the student may be prepared to qualify for a position as government chemist.

The third year of this course consists of at least 700 hours instruction.

TIME TO ENTER

All students should be present at the beginning of the session in September. Students who enter in September will finish the Junior Course the following June. They will have a vacation during the Summer months and take up the Senior Course in September, the second year. The Senior Course is completed in eight months, or about the first of June. Those who enter after the session has begun must take up all back work in order to receive full credit for the work of the course, otherwise they will receive credit for the actual time in attendance.

Prospective students should notify the college of their intention of enrolling as soon as possible in order to secure locker reservations, etc.

Course 1. General Inorganic Chemistry. Junior Year.

Lectures and Recitations, 128 hours.

Inorganic Chemistry is studied in an elementary manner, but the entire scope of the Pharmaceutical Syllabus is covered and the work is based as much as possible upon the study of those elements and compounds, with which the druggist deals. Particular reference is made at all times to those elements and compounds included in the United States Pharmacopœia. The course is given by lecture, recitation, and experiment. During the first few weeks, the lectures include the fundamental principles and thories of chemistry covering the study of atoms and molecules, atomic and molecular forces, physical and chemical changes, elementary and compound substances, etc. This work is followed by lectures and recitations on hydrogen, oxygen, nitrogen and some of the other non-metallic elements and their compounds, after which a study is made of the acids, metallic elements and their salts.

Course 2. Experimental Chemistry. Junior Year.

Laboratory, 128 hours.

This course is supplementry to the course in Inorganic Chemistry and consists entirely of laboratory work. Each student is assigned a desk in the laboratory and is equipped with sufficient apparatus to perform the experiments in the course. He is taught the proper use of apparatus and the necessary care in handling it. Particular attention is given to the neatness and care of the desks, this constituting a part of the credit for the course. It is the intention of the instructors that the students shall prepare and study, in the laboratory, the compounds which are discussed the succeeding day in Inorganic Chemistry.

Course 3. Qualitative Analysis. Junior Year.

Lectures, 16 hours. Laboratory, 96 hours.

This subject, which was once almost overlooked and thought unnecessary by the pharmacist, now finds a very important place in the curriculum of every college of pharmacy. The pharmacist finds a knowledge of it necessary in testing the identity and purity of his drugs and chemicals.

The course is practically a laboratory course. The action of the group reagents upon solutions of all the common base-forming elements is determined by experiment. The bases are then classified into groups. The method of separation of the bases of each group are studied in connection with solutions of known composition, and finally with unknown solutions. Full record is required for each step taken during the operation:—the reagent used, the result obtained, and equations showing each chemical change. Acid radicals are studied in the same systematic manner. The student is required to make a stated number of correct analyses before he is given credit for the course.

The course in Inorganic Qualitative Analysis is followed by work in Organic Qualitative Analysis. This course not only fits the student for practical analytical work, but rules and principles are developed which greatly aid in manufacturing chemistry.

Course 4. Organic Chemistry. Senior Year.

Lectures and Recitations, 96 hours.

The course in Organic Chemistry continues through the entire Senior year. It includes a study of the source of organic compounds, their properties, purification, proximate and ultimate analysis, determination of melting and boiling point, homology, isomerism, destructive distillation, combustion, decay, fermentation, determination of formula from results of analysis; structural, graphic and molecular formula, etc.

The organic substances are classified and studied under the following heads: Hydrocarbons, halogen derivatives of hydrocarbons, alcohols, aldehydes, acids, ethers,—simple and compound,—ketones, fats, soaps, carbohydrates, glucosides, cyanogen compounds, mercaptans, benzene and benzene derivatives as mono, di, and trihydroxy compounds, the aldehydes, acids, terpenes and their derivatives, diazo compounds, pyridin bases, animal and vegetable alkaloids, complex synthetic compounds as phenacentin, antipyrine and acetanelid, amines, amides and all other organic substances of pharmaceutical interest. Lectures on the commercial industries of sugar-making, brewing, soap-making, gas-making and fermentation industries are given at appropriate times during the course.

Course 5. Quantitative Analysis and Drug Assaying.

Lectures, 32 hours. Laboratory, 128 hours.

This course includes the principles of gravimetric analysis precipitation, washing, drying, igniting, and weighing the products formed; the principles of the common forms of volumetric analysis, the principles and practice of making standard and empirical solutions, together with the choice and use of proper indicators; the principles of alkaloidal estimation, and the extraction, purification, and quantitative determination, both gravimetrically and volumetrically, of these alkaloids. A strict observance of the rules for the use of balances is enforced.

Where possible, comparative gravimetric and volumetric methods are applied to the same substances in order to determine the utility of each method under varying conditions. The laboratory work is preceded by sufficient demonstrations and lectures to explain all the processes involved.

Course 6. Theoretical Pharmacy. Junior Year.

Lectures and Recitations, 32 hours.

The lectures are closely related to the practical work which the student performs in the pharmaceutical laboratory.

Emphasis is placed upon the recitation work, as it enables the student to obtain a clear conception of topics not understood when first presented.

After an introductory lecture on the History and Progress of Pharmacy, the study of the United States Pharmacopœia is undertaken and its origin, development, method of revision, and legal status fully explained. The National Formulary, Dispensatories, and other pharmaceutical literature are discussed. Then follows a consideration of weights and measures, the various systems in use and their relation to each other, the construction, choice and care of a balance and the pharmaceutical application of specific gravity and specific volume.

Heat and its sources, regulation, and measurement with different systems of thermometers and the relations of the various systems of thermometric measurement carefully considered, as are the processes of fusion, calcination, sublimation, distillation, evaporation, incineration, torrefaction, etc.

The comminution of drugs, levigation, elutriation, trochiscation, pulverization by intervention, solution, precipitation, filtration, colation, decantation, and similar processes are studied in detail. The methods of extraction by maceration and percolation are deemed especially important. Dialaysis and crystallization are studied both in class and laboratory.

Course 7. General Pharmacy. Junior Year.

Lectures and Recitations, 32 hours.

This course follows immediately after the work in theoretical Pharmacy and is devoted to a study of the simpler galenical preparations including the medicated waters, syrups, spirits, emulsions, powders, pills, etc. The lectures are accompanied by numerous demonstrations.

Course 8—Pharmaceutical Manufacturing and Technique.

Laboratory, 80 hours.

Practice is given in the use of nearly every form of pharmaceutical apparatus such as thermometers, hydrometers, pycnometers, hydrometers Mohr-Westphal balances. drying ovens, steam baths, distilling apparatus, etc. Much attention is given to the technique necessary for the successful manipulation of the apparatus and the best methods for conducting each process are employed. The instruction received in this course forms a basis for the advanced manufacturing of the Senior year. The course includes the manufacture of the simpler galenical preparations that are mentioned in Course 7.

Course 9. Advanced Pharmacy. Senior Year.

Lectures and Recitations, 96 hours

This is a continuation of the work of the Junior year. The course is comprehensive and thorough, as every class of official preparation is carefully studied, both in the classroom and in the laboratories. It includes a study of liquors, decoctions, infusions, mucilages, honeys, glycerites, elixirs, spirits, tinctures, wines, vinegars, fluid extracts, resins, oleoresins, collodions, emulsions, mixtures, pills, lozenges, confection, effervescent salts cereates, ointments, powders, triturates liniments, oleates, plasters and suppositories.

The course also includes a careful study of the elements, hydrogen, oxygen, chloride, bromide, iodine, sulphur, phosphorus, carbon, boron and their compounds; also the compounds of sodium, potassium, lithium, ammonium, calcium, strontinum, magnesium, aluminum, cerium, iron manganese, chromum, mercury, antimony, arsenic, bismuth, copper, lead, zinc, gold, silver, and also the organic substances; cellulose, starches, gums, sugar, the coal tar products and derivatives of the same, alcohols, fats, fixed oils, essential oils, organic acids, glucoses, alkaloids, neutral principles and the animal products.

At various times during the year, important pharmaceutical questions are discussed and considerable collateral reading is required of the student.

The course closes with a thorough study of the prescription, the various kinds of incompatibility, solubility of ingredients, pricing, and abundant practice in the reading of difficult prescriptions taken from the actual prescription files of the city stores.

A careful study is made of the prescription as to its purpose, its parts and the proper course of procedure upon receiving a prescription. Extensive practice is given in reading and criticising prescriptions of every character. The student is also required to write a number of typical prescriptions.

Full instruction is given as to the proper selection, care, and use of all materials used in dispensing. Methods of weighing, measuring, pasting and labeling, wrapping, cleaning of utensils, arrangements of prescription case, etc., are all thoroughly taught by theory and by an abundance of practice.

Course 10. Advanced Pharmaceutical Manufacturing.
Senior Year.

Laboratory, 120 hours.

Involves a large amount of pharmaceutical manufacturing supplementary to the class work of Course 9. The more difficult and complex preparations of practically every class are made and the student is required to save a sample of each preparation, which becomes his property upon completion of the course. Each sample is carefully inspected by the instructors and if found to be unsatisfactory, the student is required to repeat the process until a satisfactory product is obtained. The samples (over one hundred in number) are arranged in individual glass covered cases and a prize of ten dollars in gold is offered to the student having the best collection each year. Few colleges in this country offer as extensive a course in manufacturing of pharmaceuticals, as this one.

Course 11. General Dispensing. Senior Year.

Laboratory, 72 hours.

This course is scheduled last in order to give the student the benefit of all the knowledge acquired in the previous course, in developing the most important and practical part of the pharmacist's art, the art of dispensing.

Systematic instruction and an abundance of practice is given in making and dispensing the various kinds of mixtures, pills, emulsions, powders, suppositories, ointments, cereates, plasters, confections, lozenges, trouches, cachets, konseals, hard and soft capsules, bougies, etc.

Most careful attention is given to incompatibility of every kind—therapeutical, pharmaceutical, and chemical—and the methods of overcoming the same.

Several days are devoted to the preparation of toilet lotions, cold creams, greaseless creams, massage creams, tooth pastes, and similar "private formula" preparations of especial interest to the retail trade. This course is supplemented by practice in our model prescription department, in which about twelve thousand actual prescriptions were compounded for the patients of the free dispensary of the Medical College last year.

Course 12. Special Dispensing. Senior Year.

Prescription Room, 100-150 hours.

All the prescriptions written for patients at the free dispensary of Creighton College of Medicine are compounded by students of the College of Pharmacy under the supervision of instructors. The classes are divided into small sections and each section does this practical work for a given period. Perhaps as great a variety of prescriptions is filled in this department each day as is filled in any one of the city stores, since a large number of the leading physicians of the city do work in the free dispensary. Students are required to make nearly all materials used in this department. It affords a large amount of practical experience which is of great value in business.

Course 13. Botany. Junior Year.

Lectures and Recitations, 48 hours.

In order to understand the descriptions of the vegetable drugs in the United States Pharmacopœia, the National Formulary, dispensatories and current literature, as well as other valuable works upon medicinal plants, a knowledge of Botany is not only desirable, but imperative for the well informed pharmacist.

To know how to handle vegetable drugs, preserve their quality, and convert them into useful products, much of their nature must be understood. A thoroughly trained pharmacist should not only be very familiar with the more commonly used drugs, but should be on "speaking terms" with every commonly used drug of medicinal value, growing in his locality. He should know how to identify unknown plants, make proximate analyses of these and be well informed of the possibilities of medicinal plant cultivation.

The lectures cover enough of the life history of cryptogamic plants to show their relationship in structure and life history to the higher forms. The function, structure, and morphological character of the various organs and members are explained and some of the processes demonstrated by means of physiological apparatus.

Course 14. Microscopy and Elementary Pharmacognosy. Junior Year.

Laboratory, 48 hours.

The work is chiefly microscopical, acquainting the student with the common forms of cell and tissue structure, thus paving the way for the Pharmacognosy which follows. Official drugs are used for illustration when they are quite satisfactory, but much other material, such as season and native species offer, are used.

Course 15. Histological Pharamacognosy. Junior Year.

Laboratory, 48 hours.

The plan of study is that of "Kræmer's Scientific and Applied Pharmacognosy," which is used as a text. The official drugs as well as some important unofficial drugs are studied microscopically and microscopically, both in the whole and powdered forms, with a view to identification, detection of impurities, and adulteration.

Course 16. Advanced Pharmacognosy. Senior Year.

Laboratory, 96 hours

This course is a continuation of Course 15.

Course 17. Materia Medica. Junior Year.

Lectures and Recitations, 48 hours.

A lecture course supplementing the course in pharmacognosy. The action, uses, preparations, dosage, and other details not covered in pharmacognosy are considered at length.

Course 18. Materia Medica and Toxicology. Senior Year.

Lectures and Recitations, 96 hours.

This course is a continuation of Course 17. The general principles of Toxicology, symptoms and treatment, specific and general, are also included. The allied subjects, Botany, Pharmacognosy, Materia Medica, and Toxicology, include as far as possible, in a two-year course, all the important knowledge of plant life relating to the practice of pharmacy.

Course 19. Pharmaceutical Arithmetic. Junior Year.

Lectures and Recitations, 64 hours.

The course is arranged to meet the needs of those whose mathematical training has been somewhat limited, and to give to all the necessary practice in solving problems which come up in the practice of pharmacy and in chemical analysis. The work is arranged in logical order and includes problems of weights and measures, specific gravity, specific volume, conversion and reduction of formulas, percentage problems of every kind, dilution and fortification, alligation, problems involving chemical formulas and reactions and numerous miscellaneous problems. On the whole it is one of the most helpful courses given.

Course 20. Physics. Junior Year.

Lectures, 32 hours.

This subject is taken up in the Junior Year because of the important relation it bears to Chemistry and to Pharmacy. A knowledge of the elementary principles of Physics is essential to a clear understanding of these subjects. The principal topics treated are matter, force, molecular theory of structure, states of matter, properties, weights, corhesion, adhesion, capillarity, diffusion, osmosis. dialysis. Mechanics of pressure, conditions of equillibrium, the barometer, pumps and condensers, Boyles Law, the syphon, buoyancy, density and specific gravity. Under heat we study source, temperature, the thermometer and relationship of various thermometers, conduction, convention and radiation, changes in state as produced by heat as liquefaction, vaporization, distillation, sublimation, specific heat, etc. The important principles of light and electricity are also considered.

Course 21. Pharmaceutical Latin. Junior Year.

No one can thoroughly understand the official nomenclature of the materials of medicine and pharmacy without some knowledge of Latin. It is also essential in correct prescription writing. No attempt is made to give a complete course in Latin, but the aim is to present the elements of the language in such a way as to enable the student to understand the structure of the Latin words, phrases, and abbreviations that are used in medicine and pharmacy.

The text used is prepared especially for pharmacy and medical students, and contains no subject matter that is unprofitable for students of these subjects.

Course 22. Analysis of Urine. Senior Year.

Lectures and laboratory, 10 hours.

Such time is devoted to this subject as is sufficient to acquaint the student with the more common methods of identifying and estimating abnormal urinary constituents.

Course 23. Physiology. Junior Year.

Lectures and Recitations, 32 hours.

Every intelligent pharmacist should be acquainted with the structure and functions of the organs of the body. He may then better understand the action of drugs on the system. The relation between the action of drugs and Physiology is made clear to the beginner by teaching in connection with the Physiology the action of such drugs as emetics, astringents, cathartics, carminatives, etc., as illustrations. Instruction is given by recitation and lecture. Only those parts of the subjects considered of practical importance to the student are extensively taught. The subject is illustrated by specimens, manikins, and skeletons. Special lectures are given on hygiene by eminent doctors of the medical faculty.

Course 24. Conference. Junior and Senior Year.

Lectures and Debates, 16 hours.

During the second semester of each year, the combined classes are assembled weekly and the usual programme consists of a short lecture by an authority on some subject of direct interest and then a general discussion follows. Much benefit is derived from this course.

Course 25. First Aid in Emergencies. Senior Year.

Lectures, 5 hours

In connection with the course in Physiology is given a course in "First Aid to the Injured." It is a natural thing for all to rush to the nearby drug store for assistance in case of an accident of any kind. Pharmacists should be familiar with the most simple and effectual means of handling all kinds of accidents until the physician can be procured. A course in "First Aid" is given in order to make the students familiar with the best methods of procedure. This course is given in the form of lectures and by practical illustration both in the college and in the hospital. What to do in case of "Bleeding," "Fractures," "Fainting," "Drowning," "Bites of Animals," "Poisoning," etc., receive careful study. This course is not intended to fit the pharmacist to take the place of the physician, but simply to teach what should be done until the physician or surgeon can be obtained. The life of the injured very frequently depends upon what is done upon the immediate occurrence of the accident. This course meets a pressing demand and is pursued with the greatest interest and profit.

Course 26. Show-Card Writing. Junior and Senior Year.

At the request of many students in pharmacy and also proprietors, this course has been included in the curriculum. The importance of advertising by means of display cards is too well known to require explanation, and when the proprietor or clerk can make these cards, etc., in his own store without great expense, then the value of the course can readily be realized. The work is elective and the amount of time devoted to it will depend largely upon the number of students enrolling for the course.

Course 27. Pharmaceutical Jurisprudence. Senior Year.

Lectures, 3 to 5 hours.

Involving the general principles of the law as it affects the pharmacist. The lectures are chosen with great care and only those portions of the work that are of direct value, are considered.

EXAMINATIONS AND REPORTS

Regular monthly examinations are held in each branch in addition to the drills and class tests that are given from time to time in the regular course of the work. Record is kept of these monthly examinations and these records form a part of the final standing of the student. These regular examinations are a great help to the student in giving him opportunity to use the knowledge acquired and in teaching clearness of expression. A final examination must be taken in every branch before credit will be given for the completion of that particular study.

A monthly report is mailed to the parents or guardian of each student so that his progress may be observed throughout the year. This is a detail much appreciated and often inspires the students to a higher grade of work than would otherwise result.

REQUIREMENTS FOR GRADUATION

Every person upon whom this college confers the degree of Graduate in Pharmacy, must be of good moral character and have reached the age of eighteen years and have all previous conditions removed. Evidence must be furnished that the candidate has attended a full course in a recognized college of pharmacy, the last year of which must have been in this college. He must satisfactorily pass all final examinations. Unless exempted for sickness or special cause by the Dean, every student must attend at least 90 per cent of the lectures, recitations, and laboratory hours on each subject, throughout the session. The successful completion of courses 1 to 25, inclusive, is obligatory for the degree of Graduate in Pharmacy, in addition to the requirements named above.

TEXT BOOKS

All students are required to own the following text books: Caspari's Treatise on Pharmacy, McPherson & Henderson's Chemistry, Schimpf's Volumetric Analysis, Prescott & Johnson's Qualitative Chemical Analysis, Sturmer's Pharmaceutical Arithmetic, Sturmer's Pharmaceutical Latin, Hough & Sedgewick's Physiology, Kræmer's Applied and Economic Botany, Kræmer's Scientific and Applied Pharmacognosy, Wilcox's Materia Medica, Scoville's Art of Compounding, United States Pharmacopœia and the National Formulary.

REFERENCE BOOKS

The following are valuable as reference books throughout the course: United States Dispensatory, King's American Dispensatory, Remington's Practice of Pharmacy, Arny's Principles of Pharmacy, Dieterich's Pharmazeutische, and others of this type.

All text books may be obtained at the College.

EXPENSES

The total expense for the course, exclusive of books, is as follows: Junior Course, $110.00; Senior Course, $90.00; payable one-half at the beginning of each semester. Students taking their Junior Course at other colleges are required to pay $100.00 tuition for the Senior Course, one-half at the beginning of each semester. Dues not paid within ten days after the opening of the particular semester are subject to an additional charge of $5.00 per semester.

These fees include, not only tuition, use of laboratory equipment, and the other facilities of the College, but also a membership in the University Gymnasium, with locker and towel service, admission to the University athletic events, Glee Club Concerts, and a subscription to the University publications, The Chronicle, a monthly magazine, and the Courier, a monthly paper.

No tuition is refunded, but in case a student is compelled to leave school before completing the term for which he has enrolled, credit will be given for the unused portion.

EMPLOYMENT

The college will do all it can to secure employment for students who desire assistance. It will assist all who desire to defray a portion of their expenses while attending college in securing places to do relief work in stores, to act as waiters in restaurants, hotels, etc. All who desire such positions will be accommodated.

Valuable assistance will be given the graduates in securing permanent positions for them. We have many more calls for competent help than we can supply.

BOARD AND ROOM

Good rooms and board may be had, together or otherwise, near the college at reasonable rates. A list of reliable places is kept at the College office, and students are assisted in finding satisfactory places. Those who come from a distance should not engage room or board before they come to the college unless they are ecquainted in the city and understand fully the conditions.

Good rooms, including heat, light, etc., may be had for from $1.75 to $3.00 per week. Table board with private family will cost from $3.00 to $5.00 per week. Many students get board and room for $25.00 per month.

SPECIAL UNIVERSITY PRIVILEGES

Students of Pharmacy may take advantage of several Literary, Debating and Oratorical Societies, conducted under the supervision of members of the University Faculty, and they may receive individual help, just as students of the Classical Department do.

GENERAL INFORMATION

To reach the college from the Union or Burlington stations, take a Dodge street car and get off at Fourteenth street. Walk two blocks north to the college at the corner of Fourteenth and Davenport streets. The college is situated three blocks south and one block east of the Webster Street Station. Bring baggage checks to the college office and you can secure your room before having your baggage removed from the depot.

Students arriving in the city at night should go to some good hotel and report to the college next day. School is in session five full days in the week. The time required at school is from six to seven hours per day, in recitation and laboratory work. Lessons must be prepared outside of these hours.

The State Board of Examiners usually holds its February examination at the college. This gives all the graduates who have had the necessary experience an opportunity of taking this examination among familiar surroundings.

The new $175,000.00 gymnasium is one of the finest in the country and offers unusual athletic opportunities to the students of all departments.

Students of the College of Pharmacy are welcome to take part in all athletic privileges offered by the University. They also have the privilege of using the large library of Creighton University and of joining the Orchestra, Band, Glee Club, and Choir.

Frequent visits are made during the year to many large manufacturing plants in the city. A large amount of practical information is gained by these visits.

For further information concerning the College of Pharmacy, address, The Dean, 14th and Davenport Streets, Omaha, Nebraska.

For information concerning the other colleges of the University, address—

The Dean, Creighton College of Law, 210 South 18th Street.

The Dean, Creighton College of Medicine, 14th and Davenport Streets.

The Dean, Creighton College of Dentistry, 210 South 18th Street.

The Dean, Creighton College of Arts, 25th and California Streets.

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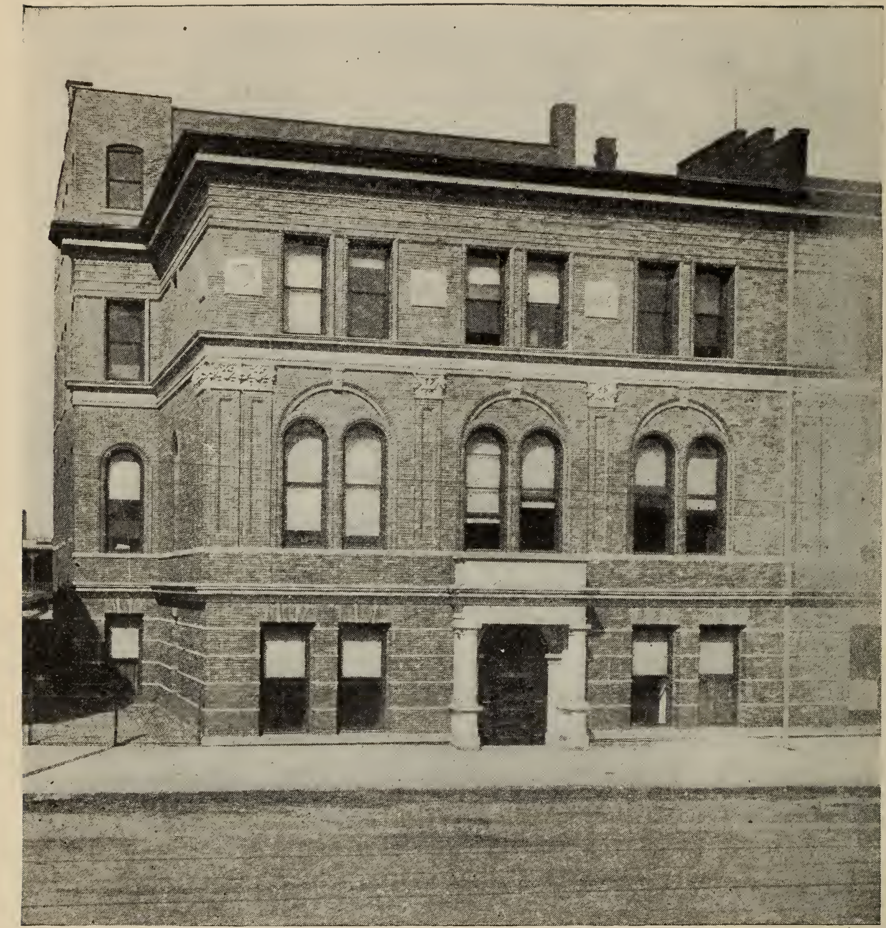

Creighton College of Pharmacy

Calendar

1918

September 21—Saturday, Registration.

September 23—Monday. Lecture Term begins.

November 28 to 30—Thursday to Saturday, inclusive, Thanksgiving Recess.

December 18 to 28—Wednesday to Saturday, inclusive, Christmas Recess.

1919

January 20 to 25—Monday to Saturday, inclusive. First Semester Examinations.

January 27—Monday. Second Semester begins, 9 A. M.

February 7—Founders' Day. Holiday.

February 22—Saturday, Washington's Birthday. Holiday.

April 18 to 20—Friday to Sunday, inclusive, Easter Recess.

May 21 to 29—Wednesday to Thursday, inclusive, Second Semester Examinations.

May 30—Friday. Memorial Day. Holiday.

May 31—Saturday. Commencement.
Recess.

Faculty

FRANCIS X. McMENAMY, S. J. ....The Creighton University
President of the University

WILLIAM P. WHELAN, S. J. ....The Creighton University
Lecturer on Moral Principle in Pharmaceutical Practice,
and Regent

HOWARD C. NEWTON, Ph. C......The Creighton College of Pharmacy
Dean, Professor of Theoretical and Practical Pharmacy

I. CURTIS ARLEDGE, P. D. ....Creighton College of Pharmacy
Professor of Materia Medica and Botany

WILLIAM J. NOLAN, M. D., Ph. G.....Creighton College of Pharmacy
Professor of General Chemistry

PAUL L. MARTIN, A. M., LL. B.............Creighton College of Law
Lecturer on Pharmaceutical Law

J. FREDERICK LANGDON, M. D. ....Brandeis Building
Lecturer on First Aids in Emergencies

HERBERT GERALD, Ph. G., M. D......Creighton College of Pharmacy
Professor of Physiology

CHARLES CROWLEY, M. D., Ph. C., A. M....................
..............................Creighton College of Pharmacy
Professor of Elementary Physics

*LELAND A. JOHNSON, Ph. G.........Creighton College of Pharmacy
Instructor in Pharmacy

ORVILLE ESHER...................Creighton College of Pharmacy
Assistant in the Laboratories

JOHN KRANCE, S. J.....................The Creighton University
Professor of Analytical Chemistry

WILLIAM F. RIGGE, S. J. ....The Creighton University
Professor of Physics

MARTIN J. PHEE, S. J.....................The Creighton University
Professor of Biology

ARCHIBALD L. MUIRHEAD, M. D......Creighton College of Medicine
Professor of Pharmacology

JOHN B. De SHRYVER, S. J................The Creighton University
Professor of French

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*Granted leave of absence while in the military service of the United States.

Introduction

The Creighton College of Pharmacy, formerly the Omaha College of Pharmacy, became a part of The Creighton University September 1, 1905. The school has enjoyed a rapid growth from the first and now ranks with the leading colleges of pharmacy in the country.

The building occupied by the College of Pharmacy adjoins the Creighton Medical College on the west, and is located at Fourteenth and Davenport streets. It is one of the finest and most completely equipped buildings of its kind. It will provide ample accommodations for the growing school for many years to come. On the first floor is a lobby which is equipped with steel lookers for the use of the gentlemen students. The offices of the Dean and the Faculty, as well as the library and museum occupy rooms adjoining the lobby. The ladies' rooms are also on this floor. These are furnished with every convenience for the comfort of the lady students.

The library contains a choice selection of standard books upon pharmaceutical and chemical subjects. It also contains a complete set of the reports of the American Pharmaceutical Association from the time of its origination in 1852.

All the leading pharmaceutical and chemical journals are kept on file.

The museum contains collections of all the materials used in pharmacy. One of the finest collections in this room is one of every drug, chemical, and pharmaceutical preparation contained in the United States Pharmacopœia. It is literally the United States Pharmacopœia illustrated. This collection is open to the use of the students for study and much valuable information is gained from it.

On the second floor are two large lecture rooms, the advanced chemistry laboratory, the laboratories for microscopy and a private laboratory for the use of the faculty.

The third floor contains the general stock room and the pharamaceutical and chemical labtoratories. These laboratories are fitted with every convenience for practical work and provide space for one hundred and forty students to work at one time.

There are some very strong features of this College which should be appreciated by all pharmacists and students of pharmacy. Foremost among these is the method of teaching—the laboratory method—admitted the best method of instruction, but possible in only the foremost colleges. Here, besides lectures and recitations, the subjects themselves are studied, books being used as an aid and not studied as an end, in themselves. The faculty is composed of men who have been actively engaged in pharmacy, both in the retail and wholesale trade and consequently are enabled to give the student the benefit of their experience. Although Creighton College of Pharmacy is one of the largest in this portion of the country, yet it offers to the student the maximum amount of personal instruction and students come into close contact with the instructors. Because of the generous endowment, superior courses can be given without increased cost to the student.

The idea of imparting practical knowledge, which dominates all the courses, can perhaps, be best exemplified by mentioning the fact that during the last year nearly 12,000 bona fide prescriptions were compounded by the students in the free dispensary.

AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES

This college holds membership in the American Conference of Pharmaceutical Faculties. The object of the Conference is to promote the interests of pharmaceutcal education and all institutions holding membership in the same must maintain certain minimum requirements for entrance and graduation. Through the influence of this Conference, higher standards of education have been adopted from time to time and the fact that several states, by law or by Board ruling, recognize the standards of the Conference, is evidence of this influence.

ENTRANCE REQUIREMENTS

Applicants for admission to the regular college course, leading to the degree of Graduate in Pharmacy, must be at least 17 years of age, unless a graduate from a high school, in which case no age limit is required, and must present written evidence, signed by the principal, superintendent, or registrar of the school attended, showing the successful completion of at least two years of accredited high school work.

Entrance to the University course, leading to the degrees of Pharmaceutical Chemist and Bachelor of Science in Pharmacy, requires a High School diploma or its equivalent, a preparation which ought to be made by every candidate for a professional degree. The university class receives instruction during three or four years instead of the two years of the regular college course.

REGULAR COLLEGE COURSE LEADING TO DEGREE OF GRADUATE IN PHARMACY

This course includes two academic years of 32 weeks each. The school year begins the last week in September and ends the first week in June (see college calendar). The first year is called the Junior and the second, the Senior year.

The course is arranged in a progressive manner. The subjects taken up at the begining of the term lay the foundation for the subjects that follow. Although lectures are given daily, the students are required to study the lessons before they are taken up in class. Then by question and explanation the instructor fixes the principles upon the student's mind in such a way that the knowledge he obtains is of practical benefit to him. All laboratory work is done under the immediate supervision of the instructors.

The training acquired qualifies the graduate to pursue successfully general pharmaceutical work or ordinary chemical analysis.

UNIVERSITY COURSE LEADING TO THE DEGREES OF PHARMACEUTICAL CHEMIST AND BACHELOR OF SCIENCE IN PHARMACY

All students who have the necessary preliminary qualifications are urgently advised to register for the university course, which qualifies the graduate for positions in government work, and as commercial Food and Drug Analysts, as well as giving a broader scope of retail pharmacy. The subjects of bacteriology, pharmacology, and advanced chemistry, as well as biology and advanced physics are taken up in this course, in addition to the subjects required in the college course.

TIME TO ENTER

All students should be present at the beginning of the session in September. Students of the college course who enter in September will finish the Junior year the following June. They will have a vacation during the Summer months and take up the Senior year in September. The Senior year is completed in eight months, or about the first of June. Students of the university course enter at the same time as the college students and pursue their studies either one or two years of eight months each, in addition to the two years of the college course.

Those who enter after the session has begun must make up all back work in order to receive full credit for the work of the course, otherwise they will receive credit for the actual time in attendance. No student will be allowed to enter later than fifteen days after the beginning of the session as the handicap of a late entrance is too great to be overcome by the average student.

Prospective students should notify the college of their intention of enrolling as soon as possible in order to secure locker reservations, etc.

CURRICULUM

1. General Inorganic Chemistry. First Year

Lectures and Recitations, 128 hours.

Inorganic Chemistry is studied in an elementary manner, but the entire scope of the Pharmaceutical Syllabus is covered and the work is based as much as possible upon the study of those elements and compounds, with which the druggist deals. Particular reference is made at all times to those elements and compounds included in the United States Pharmacopœia. The course is given by lecture, recitation, and experiment. During the first few weeks, the lectures include the fundamental principles and the theories of chemistry covering the study of atoms and molecules, atomic and molecular forces, physical and chemical changes, elementary and compound substances, etc. This work is followed by lectures and recitations on hydrogen, oxygen, nitrogen and some of the other non-metallic elements and their compounds, after which a study is made of the acids, metallic elements and their salts.

2. Experimental Chemistry. First Year

Laboratory, 128 hours.

This course is supplementary to the course in Inorganic Chemistry and consists entirely of laboratory work. Each student is assigned a desk in the laboratory and is equipped with sufficient apparatus to perform the experiments in the course. He is taught the proper use of apparatus and the necessary care in handling it. Particular attention is given to the neatness and care of the desks, this constituting a part of the credit for the course. It is the intention of the instructors that the students shall prepare and study, in the laboratory, the compounds which are discussed in Inorganic Chemistry.

3. Qualitative Analysis. First Year

Lectures, 16 hours. Laboratory, 96 hours.

This subject, which was once almost overlooked and thought unnecessary by the pharmacist, now finds a very important place in the curriculum of every college of pharmacy. The pharmacist finds a knowledge of it necessary in testing the identity and purity of his drugs and chemicals.

The course is practically a laboratory course. The action of the group reagents upon solutions of all the common base-forming elements is determined by experiment. The bases are then classified into groups. The method of separation of the bases of each group is studied in connection with solutions of known composition, and finally with unknown solutions. Full record is required for each step taken during the operation:—the reagent used, the result obtained, and equations showing each chemical change. Acid radicals are studied in the same systematic manner. The student is required to make a stated number of correct analyses before he is given credit for the course.

The course in Inorganic Qualitative Analysis is followed by work in Organic Qualitative Analysis. This course not only fits the student for practical analytical work, but rules and principles are developed which greatly aid in manufacturing chemistry.

4. Organic Chemistry. Second Year

Lectures and Recitations, 96 hours. Laboratory, 32 hours.

The course in Organic Chemistry continues through the entire Senior year. It includes a study of the source of organic compounds, their properties, purification, proximate and ultimate analysis, determination of melting and boiling point, homology, isomerism, destructive distillation, combustion, decay, fermentation, determination of formula from results of analysis; structural, graphic and molecular formula, etc.

The organic substances are classified and studied under the following heads: Hydrocarbons, halogen derivatives of hydrocarbons, alcohols, aldehydes, acids, ethers,—simple and compound,—ketones, fats, soaps, carbohydrates, glucosides, cyanogen compounds, mercaptans, benzene and benzene derivatives as mono, di, and trihydroxy compounds, the aldehydes, acids, terpenes and their derivatives, diazo compounds, pyridin bases, animal and vegetable alkaloids, complex synthetic compounds as phenacetin, antipyrine and acetanilid, amines, amides and all other organic substances of pharmaceutical interest. Lectures on the commercial industries of sugar-making, brewing, soap-making, gas-making and fermentation industries are given at appropriate times during the course.

5. Quantitative Analysis and Drug Assaying. Second Year.

Lectures, 32 hours. Laboratory, 128 hours.

This course includes the principles of gravimetric analysis precipitation, washing, drying, igniting, and weighing the products formed; the principles of the common forms of volumetric analysis, the principles and practice of making standard and empirical solutions, together with the choice and use of proper indicators; the principles of alkoloidal estimation, and the extraction, purification, and quantitative determination, both gravimetrically and volumetrically, of these alkaloids. A strict observance of the rules for the use of balances is enforced.

Where possible, comparative gravimetric and volumetric methods are applied to the same substances in order to determine the utility of each method under varying conditions. The laboratory work is preceded by sufficient demonstrations and lectures to explain all the processes involved.

6. Food and Drug Analysis. Third Year

Lectures, 32 hours. Laboratory 256 hours.

This work covers the analysis of the various food stuffs, including milk, butter, flavoring extracts, baking powders, etc., the chemical examination of water and a study of the various chemical methods of food analysis that are employed by the United States Government.

7. Theoretical Pharmacy. First Year

Lectures and Recitations, 32 hours.

The lectures are closely related to the practical work which the student performs in the pharmaceutical laboratory.

Emphasis is placed upon the recitation work, as it enables the student to obtain a clear conception of topics not understood when first presented.

After an introductory lecture on the History and Progress of Pharmacy, the study of the United States Pharmacopœia is undertaken and its origin, development, method of revision, and legal status fully explained. The National Formulary, Dispensatories, and other pharmaceutical literature are discussed. Then follows a consideration of weights and measures, the various systems in use and their relation to each other, the construction, choice and care of a balance and the pharmaceutical application of specific gravity and specific volume.

Heat and its sources, regulation, and measurement with different system of themometers and the relations of the various systems of thermometric measurement are carefully considered, as are the processes of fusion, calcination, sublimation, distillation, evaporation, incineration, torrifaction, etc.

The comminution of drugs, levigation, elutriation, trochiscation, pulverization by intervention, solution, precipitation, filtration, colation, decantation, and similar processes are studied in detail. The methods of extraction by maceration and percolation are deemed especially important. Dialaysis and crystallization are studied both in class and laboratory.

8. General Pharmacy. First Year.

Lectures and Recitations, 32 hours.

This course follows immediately after the work in theoretical Pharmacy and is devoted to a study of the simpler galenical preparations including the medicated waters, syrups, spirits, emulsions, powders, pills, etc. The lectures are accompanied by numerous demonstrations.

9. Pharmaceutical Manufacturing and Technique. First Year.

Laboratory, 80 hours.

Practice is given in the use of nearly every form of pharmaceutical apparatus such as thermometers, hydrometers, pycnometers, Mohr-Westphal balances, drying ovens, steam baths, distilling apparatus, etc. Much attention is given to the technique necessary for the successful manipulation of the apparatus and the best methods for conducting each process are employed. The instruction received in this course forms a basis for the advanced manufacturing of the Senior year. The course includes the manufacture of the simpler galenical preparations that are mentioned in Course 8.

10. Advanced Pharmacy. Second Year.

Lectures and Recitations, 96 hours.

This is a continuation of the work of the Junior year. The course is comprehensive and thorough, as every class of official preparation is carefully studied, both in the classroom and in the laboratories. It includes a study of liquors, decoctions, infusions, mucilages, honeys, glycerites, elixirs, spirits, tinctures, wines, vinegars, fluid extracts, resins, oleoresins, collodions, emulsions, mixtures, pills, lozenges, confection, effervescent salts creates, ointments, powders, trituates liniments, oleates, plasters and suppositories.

The course also includes a careful study of the elements, hydrogen, oxygen, chlorine, bromine, iodine, sulphur, phosphorus, carbon, boron and their compounds; also the compounds of sodium, potassium, lithium, ammonium, calcium, strontium, magnesium, aluminum, cerium, iron manganese, chromium, mercury, antimony, arsenic, bismuth, copper, lead, zinc, gold, silver, and also the organic substances: cellulose, starches, gums, sugar, the coal tar products and derivatives of the same, alcohols, fats, fixed oils, essential oils, organic acids, glucoses, alkaloids, neutral principles and the animal products.

At various times during the year, important pharmaceutical questions are discussed and considerable collateral reading is required of the student.

The course closes with a thorough study of the prescription, the various kinds of incompatibility, solubility of ingredients, pricing, and abundant practice in the reading of difficult prescriptions taken from the actual prescription files of the city stores.

A careful study is made of the prescription as to its purpose, its parts and the proper course of procedure upon receiving a prescription. Extensive practice is given in reading and criticising prescriptions of every character. The student is also required to write a number of typical prescriptions.

Full instruction is given as to the proper selection, care, and use of all materials used in dispensing. Methors of weighing, measuring, pasting and labeling, wrapping, cleaning of utensils, arrangements of prescription case, etc., are all thoroughly taught by theory and by an abundance of practice.

11. Commercial Pharmacy. Third Year

Class Work, 16 hours

Deals with the problems of the retail pharmacist and includes a study of salesmanship, advertising, banking, insurance, etc. The class work is in the nature of a general discussion of the subjects assigned.

12. Advanced Pharmaceutical Manufacturing. Second Year.

Laboratory, 120 hours.

Involves a large amount of pharmaceutical manufacturing supplementary to the class work of Course 10. The more difficult and complex preparations of practically every class are made and the student is required to save a sample of each preparation, which becomes his property upon completion of the course. Each sample is carefully inspected by the instructors and if found to be unsatisfactory, the student is required to repeat the process until a satisfactory product is obtained. The samples (over one hundred in number) are arranged in individual glass covered cases and a prize of ten dollars in gold is offered to the student having the best collection each year. Few colleges in this country offer as extensive a course in manufacturing of pharmaceuticals,

13. General Dispensing. Second Year.

Laboratory, 72 hours.

This course is scheduled last in order to give the student the benefit of all the knowledge acquired in the previous course, in developing the most important and practical part of the pharmacist's art the art of dispensing.

Systematic instruction and an abundance of practice is given in making and dispensing the various kinds of mixtures, pills, emulsions, powders, suppositories, ointments, cerates, plasters, confections, lozenges, troches, cachets, konseals, hard and soft capsules, bougies, etc.

Most careful attention is given to incompatibility of every kind—therapeutical, pharmaceutical, and chemical—and the method of overcoming the same.

Several days are devoted to the preparation of toilet lotions, cold creams, greaseless creams, massage creams, tooth pastes, and similar "private formula" preparations of especial interest to the retail trade. This course is supplemented by practice in our model prescription department, in which about twelve thousand actual prescriptions were compounded for the patients of the free dispensary of the Medical College last year.

14. Special Dispensing. Second Year.

Prescription Room, 100-150 hours.

All the prescriptions written for patients at the free dispensary of Creighton College of Medicine are compounded by students of the College of Pharmacy under the supervision of instructors. The classes are divided into small sections and each section does this practical work for a given period. Perhaps as great a variety of presprIptions is filled in this department each day as is filled in any one of the city stores, since a large number of the leading physicians of the city do work in the free dispensary. Students are required to make nearly all materials used in this department. It affords a large amount of practical experience which is of great value in business.

15. Botany. First Year.

Lectures and Recitations, 48 hours

In order to understand the descriptions of the vegetable drugs in the United States Pharmacopœia, the National Formulary, dispensatories and current literature, as well as other valuable works upon medicinal plants, a knowledge of Botany is not only desirable, but imperative for the well informed pharmacist.

To know how to handle vegetable drugs, preserve their quality, and convert them into useful products, much of their nature must be understood. A thoroughly trained pharmacist should not only be very familiar with the more commonly used drugs, but should be on "speaking terms" with every commonly used drug of medicinal value, growing in his locality. He should know how to identify unknown plants, make proximate analyses of these and be well informed of the possibilities of medicinal plant cultivation.

The lectures cover enough of the life history of cryptogamic plants to show their relationship in structure and life history to the higher forms. The function, structure, and morphological character of the various organs and members are explained and some of the processes demonstrated by means of physiological apparatus.

16. Biology. Second or Third Years

Lecture and Recitation, 64 hours. Laboratory, 128 hours.

A course offering a survey of the more important groups and vital phenomena of the plant and animal kingdoms.

17. Microscopy and Elementary Pharmacognosy. First Year.

Laboratory, 48 hours.

The work is chiefly microscopical, acquainting the student with the common forms of cell and tissue structure, thus paving the way for the Pharmacognosy which follows. Official drugs are used for illustration when they are quite satisfactory, but much other material, such as season and native species offer, is used.

18. Histological Pharmacognosy. First Year

Laboratory, 32 hours.

The plan of study is that of "Kræmer's Scientific and Applied Pharmacognosy," which is used as a text. The official drugs as well as some important unofficial drugs are studied macroscopically and microscopically, both in the whole and powdered forms, with a view to identification, detection of impurities, and adulteration.

19. Advanced Pharmacognosy. Second Year.

Laboratory, 64 hours.

This course is a continuation of Course 18.

20. Materia Medica. First Year

Lectures and Recitations, 48 hours

A lecture course supplementing the course in pharmacognosy. The action, uses, preparations, dosage, and other details not covered in pharmacognosy are considered at length.

21. Materia Medica and Toxicology. Second Year.

Lectures and Recitations, 96 hours

This course is a continuation of Course 20. The general principles of Toxicology, symptoms and treatment, specific and general, are also included. The allied subjects, Botany, Pharmacognosy, Materia Medica, and Toxicology, include as far as possible, in a two-year course, all the important knowledge of plant life relating to the practice of pharmacy.

22. Pharmacology. Second or Third Years.

Lecture and Laboratory 64 hours

The work in this subject includes study of the action of the various classes of drugs upon the organs of the body and consists mainly of laboratory work under the close supervision of the professor in charge.

23. Bacteriology. Third Year.

Lecture and Recitation, 48 hours. Laboratory, 96 hours.

This course is designed to meet the pharmacist's special needs, and attention is given to the method of sterilization, preparation of the various medica, insolation and identification of bacteria, moulds, yeasts, etc.

An understanding of the elements of bacteriology has become practically a necessity to the modern pharmacist.

24. Pharmaceutical Arithmetic. First Year.

Lectures and Recitations, 64 hours.

The course is arranged to meet the needs of those whose mathematical training has been somewhat limited, and to give to all the necessary practice in solving problems which come up in the practice of pharmacy and in chemical analysis. The work is arranged in logical order and includes problems of weights and measures, specific gravity, specific volume, conversion and reduction of formulas, percentage problems of every kind, dilution and fortification, alligation, problems involving chemical formulas and reactions and numerous miscellaneous problems. On the whole it is one of the most helpful courses given.

25. Elementary Physics. First Year.

Lectures, 32 hours.

This subject is taken up in the Junior Year because of the important relation it bears to Chemistry and to Pharmacy. A knowledge of the elementary principles of Physics is essential to a clear understanding of these subjects. The principal topics treated are matter, force, molecular theory of structure, states of matter, properties, weights, cohesion, adhesion, capillarity, diffusion, osmosis, dialysis. Mechanics of pressure, conditions of equillibrium, the barometer, pumps and condensers, Boyles Law, the syphon, buoyancy, density and specific gravity. Under heat we study source, temperature, the thermometer and relationship of various thermometers, conduction, convention and radiation, changes in state as produced by heat as liquefaction, vaporization, distillation, sublimation, specific heat, etc. The important principles of light and electricity are also considered.

26. General Physics. First, Second or Third Years.

Lectures and Recitations, 64 hours. Laboratory, 128 hours.

This course is identical with the course in physics required of premedical students and covers the fundamentals of physics more in detail than the physics in 25. Also an abundance of laboratory work is included.

27. Pharmaceutical Latin. First Year.

No one can thoroughly understand the official nomenclature of the materials of medicine and pharmacy without some knowledge of Latin. It is also essential in correct prescription writing. No attempt is made to give a complete course in Latin, but the aim is to present the elements of the language in such a way as to enable the student to understand the structure of the Latin words, phrases, and abbreviations that are used in medicine and pharmacy.

The text used is prepared especially for pharmacy and medical students, and contains no subject matter that is unprofitable for students of these subjects.

28 Analysis of Urine. Second Year.

Lectures and Laboratory, 10 hours

Such time is devoted to this subject as is sufficient to acquaint the student with the more common methods of identifying and estimating abnormal urinary constituents.

29. Physiology. First Year.

Lectures and Recitations, 32 hours.

Every intelligent pharmacist should be acquainted with the structure and functions of the organs of the body. He may then better understand the action of drugs on the system. The relation between the action of drugs and physiology is made clear to the beginner by teaching in connection with physiology the action of such drugs as emetics, astringents, cathartics, carminatives, etc., as illustrations. Instruction is given by recitation and lecture. Only those parts of the subjects considered of practical importance to the student are extensively taught. The subject is illustrated by specimens, manikins, and skeletons. Special lectures are given on hygiene by eminent doctors of the medical faculty.

30. Conference. First and Second Years.

Lectures and Debates, 16 hours.

During the second semester of each year, the combined classes are assembled weekly and the usual programme consists of a short lecture by an authority on some subject of direct interest and then a general discussion follows. Much benefit is derived from this course.

31. First Aid in Emergencies. Second Year.

Lectures, 10 hours.

In connection with the course in physiology is given a course in "First Aid to the Injured." It is a natural thing for all to rush to the nearby drug store for assistance in case of an accident of any kind. Pharmacists should be familiar with the most simple and effectual means of handling all kinds of accidents until the physician can be procured. A course in "First Aid" is given in order to make the students familiar with the best methods of procedure. This course is given in the form of lectures and by practical illustration both in the college and in the hospital. What to do in case of "Bleeding," "Fractures," "Fainting," "Drowning," "Bites of Animals," "Poisoning," etc., receive careful study. This course is not intended to fit the pharamacist to take the place of the physician, but simply to teach what should be done until the physician or surgeon can be obtained. The life of the injured very frequently depends upon what is done upon the immediate occurrence of the accident. This course meets a pressing demand and is pursued with the greatest interest and profit.

32. Show-Card Writing. First and Second Years.

At the request of many students in pharmacy and also proprietors, this course has been included in the curriculum. The importance of advertising by means of display cards is too well known to require explanation, and when the proprietor or clerk can make these cards, etc., in his own store without great expense, then the value of the course can readily be realized. The work is elective and the amount of time devoted to it will depend largely upon the number of students enrolling for the course.

33. Pharmaceutical Jurisprudence. Second Year.

Lectures, 3 to 5 hours.

Involving the general principles of the law as it affects the pharmacist. The lectures are chosen with great care and only those portions of the work that are of direct value, are considered.

EXAMINATIONS AND REPORTS

Regular monthly examinations are held in each branch in addition to the drills and class tests that are given from time to time in the regular course of the work. Record is kept of these monthly examinations and these records form a part of the final standing of the student. These regular examinations are a great help to the student in giving him opportunity to use the knowledge acquired and in teaching clearness of expression. A final examination must be taken in every branch before credit will be given for the completion of that particular study.

A monthly report is mailed to the parents or guardian of each student so that his progress may be observed throughout the year. This is a detail much appreciated and often inspires the students to a higher grade of work than would otherwise result.

REQUIREMENTS FOR GRADUATION

Every person upon whom this college confers the degree of Graduate in Pharmacy, must be of good moral character and have reached the age of eighteen years and have all previous conditions removed. Evidence must be furnished that the candidate has attended a full course in a recognized college of pharmacy, the last year of which must have been in this college. He must satisfactorily pass all final examinations. Unless exempted for sickness or special cause by the Dean, every student must attend at least 90 per cent of the lectures, recitations, and laboratory hours on each subject, throughout the session. The successful completion of courses 1, 2, 3, 4, 5, 7, 8, 9, 10, 12, 13, 14, 15, 17, 18, 19, 20, 21, 24, 25, 27, 28, 29, 30, 31 and 33, is obligatory for the degree of Graduate in Pharmacy, in addition to the requirements named above. For the degree of Pharmaceutical Chemist, the completion of courses 1 to 15, 17 to 24 and 26 to 31, inclusive, is required, and in addition at least 120 hours of modern languages. Course 16 is required of those taking the course as pre-medical training.

TEXT BOOKS

All students are required to own the following text books:

Remington's Pharmacy, McPherson & Henderson's Chemistry, Schimpf's Volumetric Analysis, Prescott & Johnson's Qualitative Chemical Analysis, Sturmer's Pharmaceutical Arithmetic, Sturmer's Pharmaceutical Latin, Pearce & McLeod Physiology, Kræmer's Applied and Economic Botany, Kræmer's Scientific and Applied Pharmacognosy, Wilcox's Materia Medica, Scoville's Art of Compounding, United States Pharmacopœia and the National Formulary.

REFERENCE BOOKS

The following are valuable as reference books throughout the course: United States Dispensatory, King's American Dispensatory, Caspari's Treatise of Pharmacy, Arny's Principles of Pharmacy, Dieterich's Pharmazeutische, Allen's Commercial Organic Analysis, and others of this type.

All text books may be obtained at the College.

EXPENSES

The total expense for the course, exclusive of books, is as follows: First year, $110.00; second year, $90.00; third year, $125.00; fourth year, $75.00; payable one-half at the beginning of each semester. Students taking their Junior Course at other colleges are required to pay $100.00 tuition for the second year, one-half at the beginning of each semester. Dues not paid within ten days after the opening of the particular semester are subject to an additional charge of $5.00 per semester.

These fees include, not only tuition, use of laboratory equipment, and the other facilities of the College, but also a membership in the University Gymnasium, with locker and towel service, admission to the University athletic events, Glee Club Concerts, and a subscription to the University publications, The Chronicle, a monthly magazine, and the Courier, a monthly paper.

No tuition is refunded except when the student enters the military service of the United States Government, but in case student is compelled to leave school before completing the term for which he enrolled, credit will be given for the unused portion.

EMPLOYMENT

During the past year the Creighton College of Pharmacy could have secured GOOD positions for at least twice the number of graduates, if they had been available, and these positions range from $85 to $150 per month AT THE START. This will serve to show the demand for the graduates of this college.

The college will do all it can to secure employment for students who desire assistance. It will assist all who desire to defray a portion of their expenses while attending college in securing places to do relief work in stores, to act as waiters in restaurants, hotels, etc. All who desire such positions will be accommodated.

Valuable assistance will be given the graduates in securing permanent positions for them.

BOARD AND ROOM

Good rooms and board may be had, together or otherwise, near the college at reasonable rates. A list of reliable places is kept at the College office, and students are assisted in finding satisfactory places. Those who come from a distance should not engage room or board before they come to the college unless they are acquainted in the city and understand fully the conditions.

Good rooms, including heat, light, etc., may be had for from $1.75 to $3.00 per week. Table board with private family will cost from $3.00 to $5.00 per week. Many students get board and room for $25.00 per month.

SPECIAL UNIVERSITY PRIVILEGES

Students of Pharmacy may take advantage of several Literary, Debating and Oratorical Societies, conducted under the supervision of members of the University faculty, and they may receive individual help, just as students of the Classical Department do.

GENERAL INFORMATION

To reach the college from the Union or Burlington stations, take a Dodge street car and get off at Fourteenth street. Walk two blocks north to the college at the corner of Fourteenth and Davenport streets. The college is situated three blocks south and one block east of the Webster Street Station. Bring baggage checks to the college office and you can secure your room before having your baggage removed from the depot.

Students arriving in the city at night should go to some good hotel and report to the college next day. School is in session five full days in the week. The time required at school is from six to seven hours per day, in recitation and laboratory work. Lessons must be prepared outside of these hours.

The State Board of Examiners usually holds its February examination at the college. This gives all the graduates who have had the necessary experience an opportunity of taking this examination among familiar surroundings.

The new $175,000.00 gymnasium is one of the finest in the country and offers unusual athletic opportunities to the students of all departments.

Students of the College of Pharmacy are welcome to take part in all athletic privileges offered by the University. They also have the privilege of using the large library of Creighton University and of joining the Orchestra, Band, Glee Club, and Choir.

Frequent visits are made during the year to many large manufacturing plants in the city. A large amount of practical information is gained by these visits.

For further information concerning the College of Pharmacy, address Dean H. C. Newton, 14th and Davenport Streets, Omaha, Nebraska.

HONOR ROLL

The following students and alumni of the College of Pharmacy are in the service of the United States Government:

LeRoy Armstrong, '16.
Walter A. Baker, '10.
C. R. Blythe
Harrison R. Bryan, '17.
Otto F. Breetzke.
Jesse Baxter, '15.
Richard Curzon.
Henry Christensen, '15.
Lloyd Cox.
Harry Drew, '15, (Med. Reserve).
Louis Dolezal, '07.
Joseph English, '14.
Walter Fischer, '14.
A. G. Fletcher, '12.
Carl O. Goll.
Albert Gauvereau, '15.
Oscar Geist, '17.
Raymond L. Graham, '17.
Frank B. Garman, '16.
Fred Griffin, '14.
Mark Hughes.
Fred I. Hoffman, '17.
Edward Hermansky, '11.
E. G. Hertert, '14.
Leland A. Johnson, '15.
Frank E. Johnson, '14.
A. W. Jarvis, '14.
L. B. Jewett, '14.
David Kline, '16.
A. A. Luschen, '17.
Ike Levy, '13.
Simon Levy, '13.
Jaro Mulac, '16.
Fred Marsh, '15.
E. Morris, '13.
Maurice Miller, '14.
Roger J. McElroy, '14.
Joseph McLaughlin, '15.
Fred McDonald, '09.
George F. H. Masengarb, '17.
Francis J. Monohon, '16.
Clement M. Maloney, '18.
William R. Murray, '18.
Henry Noll, '14.
Alvin A. Petersen, '16.
Howard J. Palen, '17.
Ralph Pflasterer, '14.
Lester Pope, '05.
George W. Quigley.
Charles Rutherford, '16.
M. C. Ritter.
R. C. Sherman, '13
Earl L. Sly, '17.
Ralph A. Stewart, '17.
C. E. Stevens, '17.
Bert Sample. [illegible] 1915
John Sullivan, '10.
Felix Spittler, '17.
James J. Shalda, '11.
G. F. Taffe, '14.
E. L. Thompson, '15.
George Vandas, '16.
Fred Vosika, '13.
Bert Wilson.
Melvin D. Wadley, '17.
L. C. Weber, '14.
Earl Whitford, '17.

The College will consider it a favor if relatives or friends of alumni, not in the above list but who are "in the service," will notify us so that we may make our record complete.

The Gymnasium

C862p
1919/20

THE CREIGHTON UNIVERSITY BULLETIN

VOLUME ELEVEN
NUMBER THREE

APRIL FIRST
1919

COLLEGE OF PHARMACY

ANNOUNCEMENT

1919-1920

THE LIBRARY OF THE
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OMAHA
1919

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CALENDAR

1919

September 17—Wednesday, Registration.

September 19—Friday, Classes commence.

November 27-29—Thursday to Saturday, inclusive, Thanksgiving Recess.

December 22-January 4, 1920—Monday to Sunday, inclusive, Christmas Recess.

1920

January 19-24—Monday to Saturday, inclusive, First semester examinations.

January 26—Monday, Second semester begins.

February 7—Saturday, Founders' Day, Holiday.

April 2-4—Friday to Sunday, inclusive, Easter Recess.

May 26-June 3—Wednesday to Thursday, inclusive, Second semester examinations.

June 5—Saturday, Commencement.

FACULTY

ALEXANDER J. BURROWES, S. J., Acting President of the University.

WILLIAM P. WHELAN, S. J., Regent, and Lecturer on Moral Principle in Pharmaceutical Practice.

HOWARD C. NEWTON, Ph. C., Dean, and Professor of Theoretical and Practical Pharmacy.

WILLIAM J. NOLAN, M. D., Ph. G., Professor of General Chemistry.

VINCENT J. FITZ-SIMON, Ph. C., Assistant Professor of Analytical Chemistry.

PAUL L. MARTIN, A. M., LL. B., Lecturer on Pharmaceutical Law.

J. FREDERICK LANGDON, M. D., Lecturer on First Aids in Emergencies.

HERBERT F. GERALD, Ph. G., M. D., Professor of Physiology and Histology.

CHARLES F. CROWLEY, A. M., Ph. C., M. D., Professor of Elementary Physics.

*LELAND A. JOHNSON, Ph. G., Instructor in Pharmacy.

ARCHIBALD L. MUIRHEAD, A. B., M. D., Professor of Pharmacology.

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*Granted leave of absence while in the military service of the United States.

HISTORICAL SKETCH

The Creighton University, founded in 1878, takes its name from Edward Creighton, one of the pioneers of the West, who died intestate on November 5, 1874, leaving his wife, Mary Lucretia Creighton, his sole heir. Though free to use her fortune as she pleased, she determined to carry out the oft-expressed intention of her late husband to found a free college for boys, and in her will, dated September 23, 1875, she bequeathed One Hundred Thousand Dollars for this purpose "as a memorial of my late husband." Mrs. Creighton died on January 23, 1876.

Count John A. Creighton, brother of Edward, was one of the executors of Mrs. Creighton's will. Loyally discharging his trust, he watched the new institution gradually take form and became, in time, its largest benefactor, leaving it, on his death (which occurred February 7, 1907) with a substantial endowment and a plant comprising eight large buildings specially constructed for educational purposes.

The University, which was the outgrowth of the College, now includes The Creighton University High School, as well as Colleges of Arts and Sciences, Law, Medicine, Dentistry and Pharmacy. Thanks to the Creighton generosity, tuition is free in the High School and the College of Arts; the charges are moderate in the Professional Schools. The University's enrollment, including the Summer Session, was 1,061 for the year 1918-1919; the alumni number about two thousand. Under the terms of the foundation the High School and College of Arts are open only to men, but the Professional Schools are co-educational.

COLLEGE OF PHARMACY

The Creighton College of Pharmacy, formerly the Omaha College of Pharmacy, became a part of The Creighton University September 1st, 1905. Since that time it has been housed in its own building and is provided with every facility for carrying on its work.

AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES

This college holds membership in the American Conference of Pharmaceutical Faculties. The object of the Conference is to promote the interests of pharmaceutical education and all institutions holding membership in the same must maintain certain minimum requirements for entrance and graduation. Through the influence of this Conference, higher standards of education have been adopted from time to time and the fact that several states, by law or by Board ruling, recognize the standards of the Conference, is evidence of this influence.

BUILDINGS

The College of Pharmacy is located at Fourteenth and Davenport Streets immediately adjoining the Creighton College of Medicine, and its close connection with the medical college permits the students the greatest amount of practical work in connection with the free clinic maintained there, while its location in the heart of the wholesale and retail drug houses of the city is of especial value.

LIBRARY AND MUSEUM

The library contains a choice selection of standard books upon pharmaceutical and chemical subjects, in addition to a complete set of the Reports of the American Pharmaceutical Association from the time of its origin in 1852. Complete files of all the leading pharmaceutical and chemical journals are on hand.

The museum contains a collection of all materials used in pharmacy. One of the finest collections is one of every drug, chemical and pharmaceutical preparation contained in the United States Pharmacopoeia. It is literally the United States Pharmacopoeia illustrated . This collection is open to the use of the students for study and much valuable information is gained from it.

METHOD OF TEACHING

The method of teaching in use, namely the laboratory method, is admittedly the best method of instruction. Besides lectures and recitations, the subjects themselves are studied, books being used as an aid and not studied as an end in themselves. The faculty is composed of men who have been actively engaged in pharmacy, both in the retail and wholesale trade, and consequently are enabled to give the student the benefit of their experience.

ADMISSION

Applicants for admission to the regular Two-Year course, leading to the degree of Graduate in Pharmacy, must be at least 17 years of age, unless a graduate from a high school, in which case no age limit is required, and must present written evidence, signed by the principal, superintendent, or registrar of the school attended, showing the successful completion of at least two years of accredited high school work.

Entrance to the Three-Year course, leading to the degree of Pharmaceutical Chemist, requires a High School diploma or its equivalent, a preparation which ought to be made by every candidate for a professional degree.

All students should be present at the beginning of the session in September. Students of the college course who enter in September will finish the Junior year the following June. They will have a vacation during the Summer months and take up the Senior year in September. The Senior year is completed in eight months, or about the first of June. Students of the university course enter at the same time as the college students and pursue their studies either one or two years of eight months each, in addition to the two years of the college course.

Those who enter after the session has begun must make up all back work in order to receive full credit for the work of the course, otherwise they will receive credit for the actual time in attendance. No student will be allowed to enter later than fifteen days after the beginning of the session as the handicap of a late entrance is too great to be overcome by the average student.

TWO YEAR COURSE

DEGREE OF GRADUATE IN PHARMACY

This course includes two academic years of 32 weeks each. The school year begins the last week in September and ends the first week in June.

The course is arranged in a progressive manner. The subjects taken up at the beginning of the term lay the foundation for the subjects that follow. Although lectures are given daily, the students are required to study the lessons before they are taken up in class. Then by question and explanation the instructor fixes the principles upon the student's mind in such a way that the knowledge he obtains is of practical benefit to him. All laboratory work is done under the immediate supervision of the instructors.

The training acquired qualifies the graduate to pursue successfully general pharmaceutical work or ordinary chemical analysis.

THREE-YEAR COURSE

DEGREE OF PHARMACEUTICAL CHEMIST

All students who have the necessary preliminary qualifications are urgently advised to register for the three-year course, which qualifies the graduate for positions in government work, and as commercial Food and Drug Analysts, as well as giving a broader scope of retail pharmacy. The subjects of bacteriology, pharmacology, and advanced chemistry, as well as biology and advanced physics are taken up in this course, in addition to the subjects required in the two-year course.

EXAMINATIONS AND REPORTS

Regular monthly examinations are held in each branch in addition to the drills and class tests that are given from time to time in the regular course of the work. Record is kept of these monthly examinations and these records form a part of the final standing of the student. These regular examinations are a great help to the student in giving him opportunity to use the knowledge acquired and in teaching clearness of expression. A final examination must be taken in every branch before credit will be given for the completion of that particular study.

A monthly report is mailed to the parents or guardian of each student so that his progress may be observed throughout the year. This is a detail much appreciated and often inspires the students to a higher grade of work than would otherwise result.

TEXT BOOKS

All students are required to own the following text books:

Remington's Pharmacy, McPherson & Henderson's Chemistry, Schimpf's Volumetric Analysis, Prescott & Johnson's Qualitative Chemical Analysis, Sturmer's Pharmaceutical Arithmetic, Sturmer's Pharmaceutical Latin, Pearce & McLeod's Physiology, Kraemer's Applied and Economic Botany, Kraemer's Scientific and Applied Pharmacognosy, Wilcox's Materia Medica, Scoville's Art of Compounding, United States Pharmacopoeia and the National Formulary.

REFERENCE BOOKS

The following are valuable as reference books throughout the course: United States Dispensatory, King's American Dispensatory, Caspari's Treatise of Pharmacy, Arny's Principles of Pharmacy, Dieterich's Pharmazeutische, Allen's Commercial Organic Analysis, and others of this type.

All text books may be obtained at the College.

EXPENSES

The total expense for the course, exclusive of books, is as follows: First year, $110.00; second year, $90.00; third year, $125.00; fourth year, $75.00; payable one-half at the beginning of each semester. Students taking their first year at other colleges are required to pay $100.00 tuition for the second year, one-half at the beginning of each semester. Dues not paid within ten days after the opening of the particular semester are subject to an additional charge of $5.00 per semester.

These fees include, not only tuition, use of laboratory equipment, and the other facilities of the College, but also a membership in the University Gymnasium, with locker and towel service, admission to the University athletic events, Glee Club Concerts, and a subscription to the University publications, The Chronicle, a monthly magazine, and the Courier, a monthly paper.

No tuition is refunded, but in case a student is compelled to leave school before completing the term for which he enrolled, credit will be given for the unused portion.

EMPLOYMENT

The college will do all it can to secure employment for students who desire assistance. It will assist all who desire to defray a portion of their expenses while attending college in securing places to do relief work in stores, to act as waiters in restaurants, hotels, etc.

Valuable assistance will be given the graduates in securing permanent positions.

BOARD AND ROOM

Board and room may be had, together or otherwise, near the college at reasonable rates. A list of reliable places is kept at the College office, and students are assisted in finding satisfactory places. Those who come from a distance should not engage room or board before they come to the college unless they are acquainted in the city and understand fully the conditions.

Good rooms, including heat, light, etc., may be had for from $1.75 to $3.00 per week. Table board with private family will cost from $3.00 to $5.00 per week. Many students get board and room for $25.00 per month.

SPECIAL UNIVERSITY PRIVILEGES

Students of Pharmacy may take advantage of several Literary, Debating and Oratorical Societies, conducted under the supervision of members of the University faculty, and they may receive individual help, as do students of the Classical Department.

REQUIREMENTS FOR DEGREES

GRADUATE IN PHARMACY

Every person upon whom this college confers the degree of Graduate in Pharmacy, must be of good moral character and have reached the age of 18 years. Evidence must be furnished that the candidate has attended a full course in a recognized college of pharmacy, the last year of which must have been in this College. He must satisfactorily pass all the final examinations. Unless exempted for sickness or special cause by the Dean, every student must attend at least 90 per cent of the lectures, recitations and laboratory hours in each subject, throughout the session.

The successful completion of the following courses is obligatory for the degree of Graduate in Pharmacy:

Chemistry, Courses 1, 2, 3, 4, 5, 7.
Pharmacy, Courses 1, 2, 3.
Pharmaceutical Manufacturing, Courses 1, 2.
Dispensing, Courses 1, 2.
Botany.
Pharmacognosy, Courses 1, 2, 3.
Materia Medica, Courses 1, 2.
Arithmetic.
Physics.
Latin.
Physiology.
Conference.
First Aid.
Pharmaceutical Jurisprudence.

PHARMACEUTICAL CHEMIST

For the degree of Pharmaceutical Chemist, all the courses in the curriculum must be completed, with the exception of Biology and Physics, Course 1, and in addition at least 8 hours of College credit (120 clock hours) in modern languages.

CURRICULUM

ARITHMETIC

1. Pharmaceutical Arithmetic. The course is arranged to meet the needs of those whose mathematical training has been somewhat limited, and to give to all the necessary practice in solving problems which come up in the practice of pharmacy and in chemical analysis. The work is arranged in logical order and includes problems of weights and measures, specific gravity, specific volume, conversion and reduction of formulas, percentage problems of every kind, dilution and fortification, alligation, problems involving chemical formulas and reactions and numerous miscellaneous problems. On the whole it is one of the most helpful courses given. First year: Lectures and Recitations, 64 hours.

BACTERIOLOGY

1. General Bacteriology. This course is designed to meet the pharmacist's special needs, and attention is given to the method of sterilization, preparation of the various medica, isolation and identification of bacteria, moulds, yeasts, etc. Third year: Lectures and Recitations, 48 hours; Laboratory, 96 hours.

BIOLOGY

1. General Biology. A course offering a survey of the more important groups and vital phenomena of the plant and animal kingdoms. Second or Third years: Lectures and Recitations, 64 hours; Laboratory, 128 hours.

BOTANY

1. General Botany. In order to understand the descriptions of the vegetable drugs in the United States Pharmacopoeia, the National Formulary, dispensatories and current literature, as well as other valuable works upon medicinal plants, a knowledge of Botany is not only desirable, but imperative for the well informed pharmacist.

To know how to handle vegetable drugs, preserve their quality, and convert them into useful products, much of their nature must be understood. A thoroughly trained pharmacist should not only be familiar with the more commonly used drugs, but should be on "speaking terms" with every commonly used drug of medicinal value, growing in his locality. He should know how to identify unknown plants, make proximate analyses of these and be well informed of the possibilities of medicinal plant cultivation.

The lectures cover enough of the life history of cryptogamic plants to show their relationship in structure and life history to the higher forms. The function, structure, and morphological character of the various organs and members are explained and some of the processes demonstrated by means of physiological apparatus. First year: Lectures and Recitations, 48 hours.

CHEMISTRY

1. General Inorganic Chemistry. Inorganic Chemistry is studied in an elementary manner, but the entire scope of the

Pharmaceutical Syllabus is covered and the work is based as much as possible upon the study of those elements and compounds, with which the druggist deals. Particular reference is made at all times to those elements and compounds included in the United States Pharmacopoeia. The course is given by lecture, recitation, and experiment. During the first few weeks, the lectures include the fundamental principles and the theories of chemistry covering the study of atoms and molecules, atomic and molecular forces, physical and chemical changes, elementary and compound substances, etc. This work is followed by lectures and recitations on hydrogen, oxygen, nitrogen and some of the other non-metallic elements and their compounds, after which a study is made of the acids, metallic elements and their salts. First year: Lectures and Recitations, 128 hours.

2. **Experimental Chemistry.** This course is supplementary to the course in Inorganic Chemistry and consists entirely of laboratory work. Each student is assigned a desk in the laboratory and is equipped with sufficient apparatus to perform the experiments in the course. He is taught the proper use of apparatus and the necessary care in handling it. Particular attention is given to the neatness and care of the desks, this constituting a part of the credit for the course. It is the intention of the instructors that the students shall prepare and study, in the laboratory, the compounds which are discussed in Inorganic Chemistry. First year: Laboratory, 128 hours.

3. **Qualitative Analysis.** The course is practically a laboratory course. The action of the group reagents upon solutions of all the common base-forming elements is determined by experiment. The bases are then classified into groups. The method of separation of the bases of each group is studied in connection with solutions of known composition, and finally with unknown solutions. Full record is required for each step taken during the operation:—the reagent used, the result obtained, and equations showing each chemical change. Acid radicals are studied in the same systematic manner. The student is required to make a stated number of correct analyses before he is given credit for the course.

The course in Inorganic Qualitative Analysis is followed by work in Organic Qualitative Analysis. This course not only fits the student for practical analytical work, but rules and principles are developed which greatly aid in manufacturing chemistry. First year: Lectures, 16 hours; Laboratory, 96 hours.

4. **Organic Chemistry.** It includes a study of the source of organic compounds, their properties, purification, proximate and ultimate analysis, determination of melting and boiling point, homology, isomerism, destructive distillation, combustion, decay, fermentation, determination of formula from results of analysis; structural, graphic and molecular formula, etc.

The organic substances are classified and studied under the following heads: Hydrocarbons, halogen derivatives of hydrocarbons, alcohols, aldehydes, acids, ethers,—simple and compound,—ketones, fats, soaps, carbohydrates, glucosides, cyanogen compounds, mercaptans, benzene and benzene derivatives as mono, di, and trihydroxy compounds, the aldehydes, acids, terpenes and their derivatives, diazo compounds, pyridin bases, animal and vegetable alkaloids, complex synthetic compounds as phenacetin, antipyrine and acetanilid, amines, amides and all other organic substances of pharmaceutical interest. Lectures on the commercial industries of sugar-making, brewing, soap-making, gas-making and fermentation industries are given at appropriate times during the course. Second year: Lectures and Recitations, 96 hours; Laboratory, 32 hours.

5. Quantitative Analysis and Drug Assaying. This course includes the principles of gravimetric analysis, precipitation, washing, drying, igniting and weighing the products formed; the principles of the common forms of volumetric analysis, the principles and practice of making standard and empirical solutions, together with the choice and use of proper indicators; the principles of alkoloidal estimation, and the extraction, purification and quantitative determination, both gravimetrically and volumetrically, of these alkaloids. A strict observance of the rules for the use of balances is enforced. Where possible, comparative gravimetric and volumetric methods are applied to the same substances in order to determine the utility of each method under varying conditions. The laboratory work is preceded by sufficient demonstrations and lectures to explain all the processes involved. Second year: Lectures, 32 hours; Laboratory, 128 hours.

6. Food and Drug Analysis. This work covers the analysis of the various food stuffs, including milk, butter, flavoring extracts, baking powders, etc., the chemical examination of water and a study of the various chemical methods of food analysis that are employed by the United States government. Third year: Lectures, 32 hours; Laboratory, 256 hours.

7. Analysis of Urine. Such time is devoted to this subject as is sufficient to acquaint the student with the more common methods of identifying and estimating abnormal urinary constituents. Second year: Lectures and Laboratory, 30 hours.

CONFERENCE

1. Conference. During the second semester of each year, the combined classes are assembled weekly and the usual program consists of a short lecture by an authority on some subject of direct interest and a general discussion follows. Much benefit is derived from this course. First and Second years: Lectures and Debates, 16 hours.

DISPENSING

1. General Dispensing. Systematic instruction and an abundance of practice is given in making and dispensing the various kinds of mixtures, pills, emulsions, powders, suppositories, ointments, cerates, plasters, confections, lozenges, troches, cachets, konseals, hard and soft capsules, bougies, etc.

Most careful attention is given to incompatibility of every kind —therapeutical, pharmaceutical, and chemical—and the method of overcoming the same.

Several days are devoted to the preparation of toilet lotions, cold creams, greaseless creams, massage creams, tooth pastes and similar "private formula" preparations of especial interest to the retail trade. This course is supplemented by practice in our model prescription department, in which about twelve thousand actual prescriptions were compounded for the patients of the free dispensary of the Medical College last year. Second year: Laboratory, 72 hours.

2. **Special Dispensing.** All the prescriptions writen for patients at the free dispensary of Creighton College of Medicine are compounded by students of the College of Pharmacy under the supervision of instructors. The classes are divided into small sections and each section does this practical work for a given period. Perhaps as great a variety of prescriptions is filled in this department each day as is filled in any one of the city stores, since a large number of the leading physicians of the city do work in the free dispensary. Students are required to make nearly all materials used in this department. Second year: Prescription Room, 100-150 hours.

FIRST AID

1. **First Aid in Emergencies.** In connection with the course in physiology is given a course in "First Aid to the Injured." Pharmacists should be familiar with the most simple and effectual means of handling all kinds of accidents until a physician can be procured. A course in "First Aid" is given in order to make the students familiar with the best methods of procedure. This course is given in the form of lectures and by practical illustration both in the college and in the hospital. What to do in case of "Bleeding," "Fractures," "Fainting," "Drowning," "Bites of Animals," "Poisoning," etc., receive careful study. This course is not intended to fit the pharmacist to take the place of the physician, but simply to teach what should be done until the physician or surgeon can be obtained. The life of the injured very frequently depends upon what is done upon the immediate occurrence of the accident. Second year: Lectures, 10 hours.

LATIN

1. **Pharmaceutical Latin.** No one can thoroughly understand the official nomenclature of the materials of medicine and pharmacy without some knowledge of Latin. It is also essential in correct prescription writing. No attempt is made to give a complete course in Latin, but the aim is to present the elements of the language in such a way as to enable the students to understand the structure of the Latin words, phrases, and abbreviations that are used in medicine and pharmacy. The text used is prepared especially for pharmacy and medical students, and contains no subject matter that is unprofitable for students of these subjects. First year: 32 hours.

MATERIA MEDICA

1. **Materia Medica.** A lecture course supplementing the course in pharmacognosy. The action, uses, preparations, dosage and other details not covered in pharmacognosy are considered at length. First year: Lectures and Recitations, 48 hours.

2. **Materia Medica and Toxicology.** This course is a continuation of Course 1. The general principles of Toxicology, symptoms and treatment, specific and general, are also included. The allied

subjects, Botany, Pharmacognosy, Materia Medica and Toxicology, include as far as possible, in a two-year course, all the important knowledge of plant life relating to the practice of pharmacy. Second year: Lectures and Recitations, 96 hours.

PHARMACEUTICAL JURISPRUDENCE

1. **Pharmaceutical Jurisprudence.** Involving the general principles of the law as it affects the pharmacist. The lectures are chosen with great care and only those portions of the work that are of direct value, are considered. Second year: Lectures, 3 to 5 hours.

PHARMACEUTICAL MANUFACTURING

1. **Pharmaceutical Manufacturing and Technique.** Practice is given in the use of nearly every form of pharmaceutical apparatus such as thermometers, hydrometers, pycnometers, Mohr-Westphal balances, drying ovens, steam baths, distilling apparatus, etc. Much attention is given to the technique necessary for the successful manipulation of the apparatus and the best methods for conducting each process are employed. The instruction received in this course forms a basis for the advanced manufacturing of the Senior year. The course includes the manufacture of the simpler galenical preparations that are mentioned in Pharmacy, Course 2. First year: Laboratory, 80 hours.

2. **Advanced Pharmaceutical Manufacturing.** Involves a large amount of pharmaceutical manufacturing supplementary to the class work of Course 1. The more difficult and complex preparations of practically every class are made and the student is required to save a sample of each preparation, which becomes his property upon completion of the course. Each sample is carefully inspected by the instructors and if found to be unsatisfactory, the student is required to repeat the process until a satisfactory product is obtained. The samples (over one hundred in number) are arranged in individual glass covered cases and a prize of ten dollars in gold is offered to the student having the best collection each year. Second year: Laboratory, 120 hours.

PHARMACOGNOSY

1. **Microscopy and Elementary Pharmacognosy.** The work is chiefly microscopical, acquainting the student with the common forms of cell and tissue structure, thus paving the way for the Pharmacognosy which follows. Official drugs are used for illustration when they are quite satisfactory, but much other material, such as season and native species offer, is used. First year: Laboratory, 48 hours.

2. **Histological Pharmacognosy.** The plan of study is that of "Kraemer's Scientific and Applied Pharmacognosy," which is used as a text. The official drugs as well as some important unofficial drugs are studied macroscopically and microscopically, both in the whole and powdered forms, with a view to identification, detection of impurities and adulteration. First year: Laboratory, 32 hours.

3. **Advanced Pharmacognosy.** This course is a continuation of Course 2. Second year: Laboratory, 64 hours.

PHARMACOLOGY

1. Pharmocology. The work in this subject includes study of the action of the various classes of drugs upon the organs of the body and consists mainly of laboratory work under the close supervision of the professor in charge. Second or Third years: Lectures and Laboratory, 64 hours.

PHARMACY

1. Theoretical Pharmacy. The lectures are closely related to the practical work which the student performs in the pharmaceutical laboratory.

Emphasis is placed upon the recitation work, as it enables the student to obtain a clear conception of topics not understood when first presented.

After an introductory lecture on the History and Progress of Pharmacy, the study of the United States Pharmacopoeia is undertaken and its origin, development, method of revision, and legal status fully explained. The National Formulary, Dispensatories and other pharmaceutical literature are discussed. Then follows a consideration of weights and measures, the various systems in use and their relation to each other, the construction, choice and care of a balance and the pharmaceutical application of specific gravity and specific volume.

Heat and its sources, regulation and measurement with different systems of thermometers and the relations of the various systems of thermometric measurement are carefully considered, as are the processes of fusion, calcination, sublimation, distillation, evaporation, incineration, torrifaction, etc.

The comminuation of drugs, levigation, elutriation, trochiscation, pulverization by intervention, solution, precipitation, filtration, colation, decantation and similar processes are studied in detail. The methods of extractions by maceration and percolation are deemed especially important. Dialysis and crystallization are studied both in class and laboratory. First year: Lectures and Recitations, 32 hours.

2. General Pharmacy. This course follows immediately after the work in theoretical Pharmacy and is devoted to a study of the simpler galenical preparations including the medicated waters, syrups, spirits, emulsions, powders, pills, etc. The lectures are accompanied by numerous demonstrations. First year: Lectures and Recitations, 32 hours.

3. Advanced Pharmacy. This is a continuation of the work of the First year. The course is comprehensive and thorough, as every class of official preparation is carefully studied, both in the classroom and in the laboratories. It includes a study of liquors, decoctions, infusions, mucilages, honeys, glycerites, elixirs, spirits, tinctures, wines, vinegars, fluid extracts, resins, oleoresins, collodions, emulsions, mixtures, pills, lozenges, confection, effervescent salts, creates, ointments, powders, trituates, liniments, oleates, plasters and suppositories.

The course also includes a careful study of the elements, hydrogen, oxygen, chlorine, bromine, iodine, sulphur, phosphorus, carbon, boron and their compounds; also the compounds of sodium, potassium, lithium, ammonium, calcium, strontium, magnesium, aluminum, cerium, iron manganese, chromium, mercury, antimony, arsenic, bismuth, copper, lead, zinc, gold, silver and also the organic substances: cellulose, starches, gums, sugar, the coal tar products and derivatives of the same, alcohols, fats, fixed oils, essential oils, organic acids, glucoses, alkaloids, neutral principles and the animal products.

At various times during the year, important pharmaceutical questions are discussed and considerable collateral reading is required of the student.

The course closes with a thorough study of the prescription, the various kinds of incompatibility, solubility of ingredients, pricing, and abundant practice in the reading of difficult prescriptions taken from the actual prescription files of the city stores.

A careful study is made of the prescription as to its purpose, its parts and the proper course of procedure upon receiving a prescription. Extensive practice is given in reading and criticising prescriptions of every character. The student is also required to write a number of typical prescriptions. Second year: Lectures and Recitations, 96 hours.

4. **Commercial Pharmacy.** Deals with the problems of the retail pharmacist and includes a study of salesmanship, advertising, banking, insurance, etc. The class work is in the nature of a general discussion of the subjects assigned. Third year: Class work, 16 hours.

PHYSICS

1. **Elementary Physics.** This subject is taken up in the First Year because of the important relation it bears to Chemistry and to Pharmacy. A knowledge of the elementary principles of Physics is essential to a clear understanding of these subjects. The principal topics treated are matter, force, molecular theory of structure, states of matter, properties, weights, cohesion, adhesion, capillarity, diffusion, osmosis, dialysis. Mechanics of pressure, conditions of equilibrium, the barometer, pumps and condensers, Boyles Law, the syphon, buoyancy, density and specific gravity. Under heat we study source, temperature, the themometer and relationship of various themometers, conduction, convention and radiation, changes in state as produced by heat as liquefaction, vaporization, distillation, sublimation, specific heat, etc. The important principles of light and electricty are also considered. First year: Lectures, 32 hours.

2. **General Physics.** This course is identical with the course in physics required of premedical students and covers the fundamentals of physics more in detail than the physics in Course 1. Also an abundance of laboratory work is included. First, Second or Third years: Lectures and Recitations, 64 hours; Laboratory, 128 hours.

PHYSIOLOGY

1. **General Physiology.** The relation between the action of drugs and physiology is made clear to the beginner by teaching in

connection with physiology the action of such drugs as emetics, astringents, cathartics, carminatives, etc., as illustrations. Instruction is given by recitation and lecture. Only those parts of the subjects considered of practical importance to the student are extensively taught. The subject is illustrated by specimens, manikins and skeletons. Special lectures are given on hygiene by professors of the medical faculty. First year: Lectures and Recitations, 32 hours.

SHOW-CARD WRITING

1. Show-Card Writing. At the request of many students in pharmacy and also proprietors, this course has been included in the curriculum. The importance of advertising by means of display cards is too well known to require explanation, and when the proprietor or clerk can make these cards, etc., in his own store without great expense, then the value of the course can readily be realized. The work is elective and the amount of time devoted to it will depend largely upon the number of students enrolling for the course. First and Second years.

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COLLEGE OF PHARMACY ENROLLMENT—1918-1919

ABBREVIATIONS—(A), Arts College; (D), Dental College; (H), High School; (L), Law College; (M), Medical College; (P), Pharmacy College; (PG), Post-Graduate; (n), night session; (s), summer session.

Numbers (1, 2, 3, 4), indicate the year of the course; sp, (special), denotes that the student did not fully satisfy the entrance requirements; ir, (irregular), denotes out of course; pt, (part time), denotes that less than minimum number of required hours were taken.

BARTON, VERNE DOUGLAS (P2)	Aurora, Nebraska
BEIGEL, CHARLES McAYEAL (P1)	Onawa, Iowa
BERNEY, JOSEPH GEORGE (P1)	Omaha
BELFORD, JULIUS (P1)	Omaha
BOBISUD, MILADA ROSE (P1)	Dodge, Nebraska
BENSON, CURTE, (P3)	Wood River, Nebraska
BURFORD, BERENICE (P1)	Omaha
BURT, HENRY JAK (P1)	Omaha
CARLSON, ROLAND WILLIAM (P1)	Stromsburg, Nebraska
COATS, MABEL LEOTA (P2)	Stuart, Nebraska
*COBLER, EARL MELVIEVE (P2)	Long Pine, Nebraska
CWIRKO, WALTER GODYCKI (P2)	Omaha
EMMERICK, FRANK PETER (P2)	Madison, Minnesota
EATON, HENRY (P1)	Omaha
ESHER, ORVILLE JOSEPH (P2)	Denver, Colorado
FELDHOUSEN, FREDERICK JOSEPH (P2)	Frankfort, Kansas
FRAHM, RUDOLPH JOHN HENRY (P1)	Millard, Nebraska
GAVIN, WILLARD O'BRIEN (P2)	Cascade, Iowa
HARRISON, CHARLES LUCIAN, (P1)	Indianola, Nebraska
HAYES, EDWARD TOM (P1)	Albion, Nebraska
JONES, GEORGE DEWEY (P1)	Emerson, Iowa
KELLY, LOUIS JOSEPH (P1)	Britton, South Dakota
KLUTZ, DOLE McKINLEY (P1)	Maiden, North Carolina
KOKRDA, JAMES (P2)	Omaha
LANSING, WILLIAM THEODORE (P2)	Petersburg, Nebraska
LARSEN, CHES BROCK (P1)	St. Paul, Nebraska
LANE, FLOYD (Psp2)	Ivanhoe, Minnesota
MAHER, FRANCIS EDWARD (P1)	Horton, Kansas
MEYER, FRANCES HELEN (P1)	Randolph, Nebraska
MORPHY, ARTHUR JOHN (P1)	Omaha
NESLADEK, GEORGE JAMES (P1)	Omaha
NEUMANN, GEORGE JULIUS (P1)	Indianola, Nebraska
NORMAN, HAROLD EDWARD (P1)	Oelrichs, South Dakota
ORTMANN, JOHN WESSEL (P1)	Pierz, Minnesota
PANKONIN, ELSIE FREDA (P1)	Grant, Nebraska
ROBERTS, JOHN WHITMAN (P2)	Waucoma, Iowa
ROSS, HENRY (P1)	Elm Creek, Nebraska
RUZICKA, RICHARD GEORGE (P1)	Omaha
SIMPSON, MERLE MALCOLM (P1)	Wood River, Nebraska
SMITH, JAMES HENRY (P2)	Torrington, Wyoming
SMITH, LLOYD VINCENT (P1)	Republican City, Nebraska
SUITER, MORT PHILIP (P1)	Indianola, Nebraska
SULLIVAN, WALTER ANDREW (P1)	Spalding, Nebraska
THOMPSON, ALFRED THOMAS (P2)	Omaha
UERLING, JOSEPH MATHIAS (P1)	Indianola, Nebraska
WAGNER, PINE (P1)	Randolph, Nebraska
WEBER, LEO FRED (P2)	Horton, Kansas
WHITE, CARL DAVID (P1)	Sutherland, Nebraska
WRIGHT, IRA ALVIN (P2)	Beatrice, Nebraska

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*Deceased.

RECAPITULATION

First Year	32
Second Year	16
Post-Graduate	1
TOTAL	49

For further information concerning the College of Pharmacy, address The Dean, Creighton College of Pharmacy, 14th and Davenport Sts.

For information concerning the other Colleges of the University, address

The Dean, Creighton College of Arts, 25th and California Sts.

The Dean, Creighton College of Dentistry, 210 South 18th St.

The Dean, The Creighton University High School, 25th and California Sts.

The Dean, Creighton College of Law, 210 South 18th St.

The Dean, Creighton College of Medicine, 14th and Davenport Sts.